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WE said briefly in our last number that the Washington Monument Commission had decided to recommend Mr. Story's design to the Congressional Committee on Public Buildings and Grounds. What the chances of its adoption are we do not know, but considering the wide-spread and acknowledged dissatisfaction with the present design, and the reputation of Mr. Story, it is natural enough that his design should carry the day. Now, however, that the Commission has so far yielded as to give up its adherence to the first idea, it is desirable, before the question of form is decided beyond recall, to make sure that the best thing is done that can be done, and that the authorities should not jump inconsiderately from one *parti pris* to another. Mr. Story's design, of which we have before us a large photograph, is incomparably better than the thing it is intended to supplant, and has many merits, but is on the whole disappointing; and it would be a mistake to adopt it without first finding out whether some one else had not a better thing to offer.

MR. STORY has encased — with marble, we presume — the shaft of the monument, so that the work now done disappears completely in his drawing behind the vertical walls of an Italian campanile. The shaft is carried up to near three hundred feet, and capped with a pyramidal roof which rises to three hundred and fifty, and is crowned with the winged statue of Fame, of which we have heard. The first hundred feet and more of the tower (which is a little more than fifty feet in diameter) is widened into a square lower story, or die, which projects enough to give a gallery about six feet wide around the shaft. Against the faces of this die stand the four porches, a hundred feet high, each carried on two pairs of detached columns, and containing, we suppose, a niche like that shown in front, over which is a gable, and on this perches an eagle. The statue of Washington, twenty feet high, is shown on a tall pedestal in the front niche. Just above the abutting ridges of the four porches is the bold cornice of the die, crowned by a light overhanging balustrade. The spandrels over the porch roofs are ornamented with raised panels carrying figures of Victory in relief. Above the die the corners of the shaft are reinforced by octagonal buttresses or turrets, like those on the campanile of Florence; it is cut horizontally into three divisions, each with its cornice. The lower story, which shows only about twenty-five feet above the gallery of the die, carries two blank arches on pilasters, and between them a rectangular panel. The arches are divided by single columns, supporting the usual Italian substitute for tracery, — two sub-arches with circle between. The next and middle division is more than a hundred feet high. The wall is occupied by three high blind arches carried on very slender twisted shafts, the openings divided by thread-like sub-shafts, and the heads filled with the same tracery as the two below, but the panels are divided at mid-height by a broad belt that encircles the monument, and the traceried heads are repeated under it. The third story is a kind of blind belfry-stage, thirty-six feet high, decorated with a classic order on pedestals in three intercolumniations of engaged columns, which are filled with blank arches and the same kind of tracery and sub-shafts as those below. The cornice is *quasi* machicolated, that is, has a round arched corbel table under the corona, and above it is a blocking course or stylobate filled with a slender, blind balustrade. Out of this rises somewhat abruptly the pyramid of the roof, its sides cut into plain panels relieved from a sunken ground, and its top wrought into an octagonal pedestal, on which is balanced the statue of Fame.

IT is somewhat hazardous to criticise a design from a first sketch, which may be subject to great alteration and amendment in execution; but Mr. Story has frankly spared the Commission this difficulty by presenting them what is not a sketch but a finished drawing, worked out with great care and drawn with precision in every detail, so that we may assume it to have been completely studied. The first impression of the design is dignified, tranquil, gentlemanlike, and even elegant. Its silhouette is agreeable as shown in the drawing, though a little hunched at the junction of the first story and the shaft, and somewhat wanting in firmness at the base. Some of its faults, we fear, would appear more evident in a perspective or angular view, a view in which, we may guess, Mr. Story has not studied it. The main idea, that of treating the monument after the fashion of a campanile, is not a bad one, and had been suggested by many people, among them by General Meigs and by Mr. Hill. As we said of Mr. Story's first suggestions, the difficulty was in carrying it out to avoid the commonplace. Here, it must be confessed, the effect is on the whole mechanical and mediocre; the different divisions of the design are not very successfully adjusted; the detail is at the same time monotonous and inharmonious. The group of porches around the base, and the square section which they surround, which we have called the die, do not seem adequate to the support of the shaft, which is too massive to be thrust out of a slight balcony; nor yet are we made to feel that the shaft is independent of them, and lifts itself firmly from the ground. There is a little quarrelling between lightness and massiveness, which the pains Mr. Story has taken to break up the surface of the shaft has not altogether appeased, while it has sensibly diminished the majesty due to a tower three hundred feet in height, and would probably prevent the monument from ever looking as large as it would really be, — a thing that we should suppose would be in the eyes of the Monument Commission the unpardonable sin. There is also some conflict between the upright and the horizontal lines, to reconcile which is always the greatest single difficulty in such a design. Mr. Story has successfully kept his horizontal lines predominant at the base, and the upright ones in the shaft. The curve of the archivolts of the porches and the climbing lines of the gable are the middle terms which help to unite the two elements; but their union is frustrated by the sudden interposition of the most vigorous horizontal feature of the composition, the gallery at the top of the die, with its bold cornice, its violent shadow, and its overhanging balustrade, thus a second time interfering to mar the junction of the two parts. This is to our minds a cardinal error.

THE division of the shaft itself is not very happily managed. The lower story of it is too low, and its arcading too delicate to be the support of the story of a hundred feet above it. In most positions in which the monument would be seen, — in all in which it would be studied, — only the upper part of these arcades would be seen, peering over the balustrade which surrounds them. The transition from a double to a triple division between this story and the next is not agreeable. The belfry-stage, too (we do not know what else to call it, though it is solid), which should be the predominating feature of the shaft, is low and unimportant. Its machicolated cornice is not enough to give it ascendency over the main division below, which ought to be the point of repose of the whole mass, but is so treated as to force itself on the eye and dwarf the upper division. This effect is increased by the sudden and unexpected way in which the pyramidal roof, in itself very well proportioned, is dumped (there is no other word for it) upon the blocking-course that surmounts the final cornice. The belfry-stage is of the full diameter of the tower, and there is no retreating attic above it, as in the Campanile of St. Mark's and in Palladio's beautiful Venetian towers, to prepare for the pyramid, which, therefore, finishes the composition abruptly, and on an angular view must necessarily look shrunken and too small for its position, while even in combination with the belfry-stage beneath it does not make an adequate termination for the monument which it surmounts.

The abundant detail of the design is a mixture of modern classic and mediæval Italian. It is treated with refinement, but the difficulty of the fusion is indicated in its imperfect success. The porches are carried by a somewhat freely treated classic order of Corinthian proportion and composite detail. The high attic above this carries a frieze decorated with a flat corbel table, such as we see in North Italian terra-cotta work, and a Corinthian cornice considerably bolder than that below it. The slender detached columns would seem, we fear, to be overwhelmed by the entablature and heavy attic they carry, which are so treated as to combine into a sort of compound entablature as heavy as that of the proto-doric order. The walls behind the columns, the niche, and the face of the attic are covered with an inlay of square-headed panels in colored marble, like those in the clerestory of the cathedral at Florence. Over the heavy cornice of the lower division the plinth, rail, and sparsely distributed dies are of the ordinary Renaissance form, but the balustrade between them is an extremely slender arcade, such as we see across the front or under the eaves of some early Italian churches, at Assisi or Parma for instance. The detail of the lower story of the shaft, pilasters, arcade, panelling, engaged columns, and all is the regular Renaissance. In the story above we have the attenuated spiral jamb shafts and cobweb mullions of Florentine twelfth century work, a belt of lozenge-shaped panels with quatrefoils in the middle, and an inlaid frieze under another Corinthian cornice. The belfry stage again is pure Renaissance, except for a second inlaid frieze and the machicolations of the cornice, and the slender shafted balustrade, this time without the arched heading, reappears engaged in the continuous die of the blocking-course under the pyramid.

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Mr. Story's skill, or that of the architect or architectural draughtsman who, we may suppose, has carried out his directions, has not succeeded in harmonizing these discordant elements. The hand that adjusted them was inexperienced or weak, and the task very difficult. The wire-drawn detail of the mass of the shaft does not fulfil the office of the exquisitely delicate but spirited decoration which enriches without disturbing the broad divisions of Giotto's tower, but it does away with the simple vigor of the Venetian campaniles. Nor is it reconciled with the pronounced classicism of the rest of the detail by the inlays and balustrades and corbellings that are distributed over the design. If there were less at stake it would seem ungracious to criticise with this minuteness a design which is so superior to that which it aims to supersede. But the building of such a monument is, with the exception of the Albany Capitol, the most important architectural undertaking of our time and country. It is the greatest monumental work of our age, and any design that is to be adopted for it ought therefore to be subjected to close criticism. While we would give Mr. Story credit for the boldness of his venture, and the great superiority of his scheme over the old one, we would urge that since the question has been opened to the consideration of a new project it ought not to be closed without carefully studying whether a design may not be secured which is much better than Mr. Story's.

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The condition of the flats of the Potomac at Washington has been growing offensive for a good while, and lately has been so bad that it has become evident that something decisive must be done, or the city will become intolerably unwholesome. Since the death of four representatives and the illness of others have forced the danger upon the attention of Congress, it may be expected that some effort will be made to improve matters, but the case is a difficult one. The channel of the Potomac, which formerly ran near the southerly ends of the city streets, so that vessels could come to wharf on the Washington side, has for some years been shifting over toward the Virginia side, and flats have been forming and silting up in front of the city. The drainage of the town had never been good; but when, six or seven years ago, the Board of Public Works was put in charge, it was expected that the difficulty would be finally done away with. The Board collected the sewage into two or three great sewers, utilizing a sluggish brook that found its way into the river at the lower part of the city, and carrying the whole discharge from the dense central part into a sewer at the foot of Seventeenth Street, behind the White House and the Department buildings, where the low bank recedes most from the channel, and the flats are broadest. The system was ill considered, the pitch of the sewer small, and the main outfall discharged in the upper part of the city, where the flats are actually gaining on the river, and where sewage therefore lies upon them, and accumulates into a most noxious deposit. How the difficulty is to be remedied it is not easy to say. The drainage of a large city into a tidal river, a long way from its mouth, has never been satisfactorily managed, and the trouble is aggravated when the city is at the head of tide water, and bordered by flats. The natural suggestion is to build new sewers which shall deliver into deep water below the city, but this will be a costly work, and it may be difficult on so flat a surface to get a sufficient flow in the sewers. The plan of disinfecting and utilizing the sewage seems still less promising, for it has never been accomplished on the scale necessary for a large city.

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The Governor of Ohio has called the attention of the State legislature, none too soon, it would seem, to the great injury that the State is suffering in the loss of her forests. According to his message, there were in 1870 nine and three quarters millions of acres of timber lands in Ohio, and in 1877 but five millions,— in other words, almost half the timber land that remained to the State seven years ago has been cleared, and that in a thickly populated inland State, where only one fifth of the area is now wood land. A like impolicy prevails in other timber-growing States, especially in the Northwest and in Maine. The danger of it is becoming known not only as an inconsiderate destruction of valuable property, but in its larger aspect as an injury to climate and soil, as is shown by the experience of countries which have been denuded of their woods. The probable diminution of rainfall, the certain injury to water-courses by the loss of the means of regulating the natural drainage, the increased suddenness and violence of freshets, the dwindling of streams, the aggravation of droughts,— all these things, tending to sterility and impoverishment, are known where lands have been stripped of their growth, and poverty and depopulation have followed. But while some of the far western States, where timber is scarce, are trying to redeem their scarcity by planting, the destruction of timber goes on wherever it exists as recklessly as ever. Already a good deal of land in the middle section of Maine is on the way to barrenness. Her unused water-power is still a reserved source of wealth for her when she finds a way to utilize it; but when her forests are gone there is no knowing how much of her water-power will be gone with it. As for interior States, when they have worn out their soil, and ruined its irrigation by the sacrifice of their woods, it is difficult to see what they will have left. The Secretary of the Interior might succeed, in spite of the clamor of politicians, in checking the depredations which destroy the value of our public lands; but it is hard to prevent private owners from cutting their own timber, no matter how recklessly. Yet it is hard, too, to have to permit in one man that use or abuse of his property which permanently impoverishes his neighbor and injures his country.

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The annual season of conflagrations which comes every year, like the lyceum lectures, with cold weather and the lighting of hot fires, has set in within a week or two. The burning of the Honoré building at Chicago has been followed by two large fires in the business centre of New York, which together are said to have destroyed five million dollars worth of property, besides killing a fireman, and injuring two others. The lessons of them all are the same,— the risk and the extraordinary costliness of our inflammable ways of building, and the impossibility of securing any fire department that can save us from great loss of property and even of life. In the light of these fires we can see a glimmer of consolation for the probable loss of our forests which we have been lamenting in our last paragraph,— in the hope that at least the diminishing supply of lumber may at the end force us to build with more massive and less combustible material. The inadequacy of unprotected iron, our favorite substitute, to bear the fire, was freshly illustrated in the Chicago building, where the wooden floors of the store were carried on iron columns and girders. These, we are told, giving way under the heat, brought down the floors of the store which first burned and, pulling out the party-wall, let the fire through into the next. The Chicago papers have been discussing the inability of the fire engines to throw water to the top of the highest buildings. Where the tendency is to build as high as in New York, this inability is the more serious. By the present system the head of the water in the mains, often amounting to many feet, is of no use except to feed the

engines. It might be possible to invent a way of utilizing this by contriving engines which could be used at a higher level, at least where there are elevated roads; but it would be very difficult and costly, as well as probably of limited application, and the more economical and more satisfactory way is already approved by experience, — to build structures that will not burn. To this, however, the people of Chicago do not seem disposed to turn their minds.

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IT is said that the Congressional Committee on Coinage, Weights, and Measures will report — may have reported before this paper is printed — in favor of the metric system. What their recommendations will be, or what will come of them, remains to be seen; but there is no doubt that the metric system will in due time come into current use, and it is likely that when it comes it will come, like specie payments, with very much less disturbance and difficulty than is prophesied. In the mean time Great Britain is throwing away a golden opportunity and confirming herself in ways which she will probably find it desirable by and by to abandon. She is making a thorough overhauling and unification of her own weights and measures, which differ endlessly in various parts of the kingdom, but rejects the new system, adhering persistently to her old and laborious one.

## A RETROSPECTIVE GLANCE AT SOME OF THE ARCHITECTURE OF THE FRENCH EXPOSITION.

IV.

THINGS which are needed are perforce interesting, though they may not be agreeable. But most architectural needs are capable of being made agreeable, as well as interesting. It is the fault of the projections last spoken of that, though conspicuous, they have been made, by the architect, to look neither interesting nor agreeable. Neither very interesting nor at all agreeable to look at are some vast arches between them. They are so treated as to be leading but most unfortunate features of the whole exterior. They are so big that you can see them from the other side of Paris. Yet they are not at all grand. Of course they cannot have the grandeur of voids, as they are necessarily filled with glass. And the glass is held not in what would just serve, which would at least be unobtrusive or scarce visible; and again, it is held — not in what though it would far more than serve its purpose, yet would possess a beauty in itself and so add to the beauty of the building as a whole, and not only excuse its presence but make it a delight — it is held in the most weakly designed of frames, — frames which, beside their great size and the fact that they are made of white stone, are conspicuous because their design feebly attempts to be ornamental. The whole has a poor and cheap look; and rightly, for the whole is poor in thought. It may have looked well enough on the drawing; but to take it for granted that what looks well on a drawing will look well in execution is a cheap way of designing. To make no account of the fact that until more delicate instruments, and more delicate hands to use them, than any we now have are created, the relations of parts to a whole will be entirely different in a building from what they are in a drawing, — to make no account of this fact is a cheap way of designing. To forget, as perhaps architects as eminent as he who designed this building often do, that the line we use to indicate the side of a house is no bigger than that we must use if we add a view of a spider's web on one of its window panes, and that therefore that will look rich and full and interesting on a drawing board which will look poor and thin and stupid on a building, — to forget this, I say, is a cheap way of designing. It is convenient, but the advantage is rather to the architect than to his building. It saves his time, and we all know that time is money. And it certainly is much better for his reputation to design a great many buildings well enough to pass than to design a few as well as he can do them. Only, when as spectators we look at the buildings so designed, while we congratulate the architect, we cannot help rather pitying ourselves. But further, a detail which may look well enough on the drawing board, or even when executed on a small scale on a small building, may be wholly unfit for a different usage, and can be used in such a way and on such a large scale in execution as to butter with poverty, as it were, a whole building. These window frames are executed on a vast scale, but as the design is poor in itself, and not only commonplace but one that we are accustomed to see executed on a small scale, the familiar and commonplace object, seen at a great distance without the uncertainty of outline and the air of mystery which distance lends to smaller familiar objects, does not seem large or any way uncommon. It loses all the advantage of its size. It thus belittles and makes poor the whole building, and the whole composition of which it forms a part. Everything is scaled down from these commonplace window frames, which you can see half or quite across Paris; and as, though big and holding the eye as soon as seen, they yet look poor and not big, so everything else connected with them, after seeing them, then looks poorer and more little. The narrow limits of the time allowed for the construction of this building may excuse hasty designing. The narrow limits of the pay of architects generally may excuse hasty designing in other cases. But not the less the spectator suffers a loss. Not the less is the building a sufferer, and a sufferer in proportion to the importance of the building.

When the outline of a building is just graspable in the distance, we scarcely expect to attain to a complete comprehension of the forms of its window frames or tracery. If we do, we doubt the building's being so far off or very large. We doubt it, in spite of the scales which other buildings about it or nearer us give. Of course we know it is big; but it is not what we know, but what we feel, when we are in the presence of an object that determines its value as a product of the fine arts. As long as I only know things about an object, it remains a prosaic object for me; I may know all about it and the way it is made; but the moment the way it is made gives me, apart from its direct use and incidentally, a feeling of pleasure, say, or pain, or awe, and so on, and does so intentionally, that moment it enters the dominion of the fine arts. If we know that an object, a building, is big, but none of us feel that it is grand, it is an inartistic object for us as far as its size is concerned. The truth of this appears in the subtle converse of this: as when I *feel* St. Peter's at Rome to be *grand*, and so an artistic object as far as its size is concerned, though I can scarcely believe it to be so *big* as I later, by walking around it, come to know it to be.

Now, not feeling this new Paris building to be grand, though judging by the scale of the other buildings about I come to know that it is big, naturally, if at all inclined to the study of the fine arts, I seek for a reason of this failure of the building to affect me as a fine-art object as far as its size is concerned. So reflecting, I recall that whenever, at the remotest point visible in that on which my attention is fixed, I find what I cannot clearly distinguish, my curiosity is stimulated, my interest is increased. If the object is one which, like a piece of architecture, seems to promise that a nearer view of its remotest point will reveal some beauty which distance conceals from me, a vague expectation of pleasure arises. The interest becomes a wish, a longing. But if, on the contrary, I find, at the remotest point visible in that on which my attention is fixed, nothing which I cannot clearly distinguish, — if I find nothing but some prosaic and uninteresting object with which I am perfectly familiar, my curiosity is not stimulated. I look forward to no pleasure in that direction, and in proportion as I think or fancy I had a right to expect it am I disappointed. We may again see the truth of this when we recall that to encounter the commonplace where we expect, as in distance, the ungraspable gives disappointment in other things than architecture. I look from a window at a fine prospect in a mountainous country. I look across the dusty road to that old wall, and over it to that meadow, and on to those oaks, and beyond to that wide-rolling country, and up the mountain-side, and to those peaks and the clouds, with ever-expanding and more and more ennobling emotions. Now, suppose I could place on that mountain-top some large, commonplace, plainly seen, and easily read object, like a vast patent-medicine sign, — or a big, square, white wooden hotel: would not that belittle and vulgarize the whole landscape? Would it not require an effort to resist its influence on our minds? Would it not be spoken of as "spoiling" the whole landscape? If then a big, commonplace object at its remotest point can be said to spoil so vast a thing as a landscape, what will it not do to a building? The mediæval architects never made this blunder. Their details are like crockets on a spire. They do not decrease in elaboration or apparent interest, though they often do decrease in size, as they retreat from the eye. And where, as in this Paris case, they wished to employ large archways for the admission of light at lofty and conspicuous points in their buildings, and to use glass in them also, we know how they not only made them amongst the most beautiful of the individual features of their buildings, but, by the multiplicity, fineness, and elaboration of their details, made them add, almost more than any other part of their buildings, to the effect of grandeur and beauty and wealth of thought of the whole.

Wealth of thought is just what the Paris building has to me the look of lacking. A wealth of thought, and thought to good purpose, has been expended on the plan. The whole plan seems to have been well thought out before committing it to paper. But the elevations, the building as it now stands, I could not help thinking far from a success. Those whom I heard speak of the building, whether Frenchmen or strangers, called it ugly. It is true that a thing may be ugly and yet interesting; but this is ugly and uninteresting. Its material, color, outlines, and relation of parts or proportions, all combine to make it rather ordinary-looking. A monumental building of brick, with stone finish, the brick of a faded pink color, with a clumsy outline like a big belly swelling out between two crab-like arms, with colonnades of small scale to be used on so large a plan, and with big bald windows and a tortoise-back shaped roof; such seems to me a not attractive, but also a not unfair description of this building. It does not seem to add to its interest that it is further adorned with two chimney-like and useless-looking campaniles, which are never to be lost sight of, though not in themselves especially happy as designs. There is about the whole exterior a kind of flavor, of which the views of it published give no idea, a flavor of being what some people call "Carpenters' Gothic;" a meaningful phrase, because it shrewdly grasps and roughly expresses the subtle idea that forms have been copied without the needs or the materials which called them forth being present.

But of course in the future the importance of the event which is

the occasion of this building will be relatively changed. The Exposition, though now playing or having played a certain and a more or less influential part in French history, will gradually be forgotten, or only be recalled to the minds of people by the building now erected to record it. A building as grandiose as would when the Exposition first opened, or as would even now seem fitting, will then seem out of place. Brick will then seem a material quite monumental enough for its object, pink a very cheerful and pretty color; the Parisians will go on adding statuary and ornaments, as their habit is, until the clumsy outline is quite lost; the colonnades that now look too little will then look dainty; the bald big windows will get filled up with tracery — not Gothic, but in the untrammelled style of the rest of the building; what is then seen of the roof over some perhaps added parapet will, with thoughtful treatment or adornment, come to show itself like some tortoises' backs — beautiful. A use will be found for the campaniles, and, in fitting them to that use, they will get very likely an added vigor not only of purpose but of outline. Meantime the flowers, the shrubs, the trees now planted will grow; storms will beat, and the flow of the fountains and cascades, which some added serrations in their lips will have made more sparkling, will leave a kindly stain. It is true that we cannot credit art or architects with the effects of time, for from their uncertainty they cannot be so foreseen as to enter much into artistic calculations. But this is not only true of this building but of all buildings. We often forget this, and credit the architects of the admired monuments of the past with a charm due to accidental effects of time and forces wholly absent from their calculations. It is just because of this habit of ours that it is proper to think of what time will do for this building, when judging of its success as compared with other buildings.

The site, the occasion, and the money spent have given an opportunity to add another to the architectural pleasures of the world. If that has been done, if a beautiful building has been made, we may profit by the study of it. If that has not been done, if a complete success has not been achieved, if the sight of the building fails to give us pleasure, we may still profit by the study of the causes of defeat. We may learn what to avoid. The chances are that such study will especially reward us; for that which produces a disagreeable effect on the spectator we know is often detected by ordinary minds: whereas that which gives pleasure may be the product of genius, and so the secret of its pleasure-giving power be often, perhaps always, beyond the grasp of even extraordinary minds.

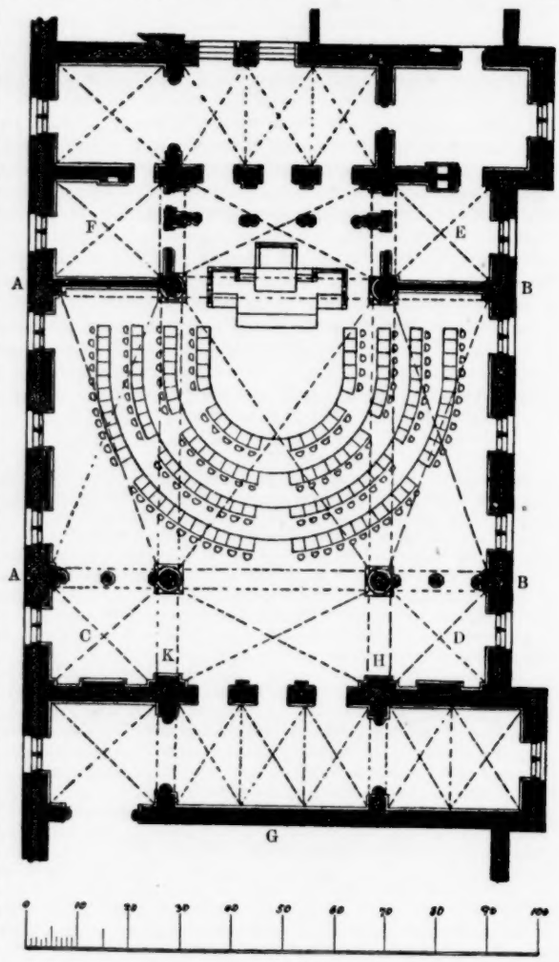
## THE NEW ARCHITECTURE AT ALBANY.

II.

To the Editor of the American Architect:

*Sir*, — In the letter which you printed last week I ventured to give my impressions of the exterior architecture, and the interior decorations and constructions, of the new capitol at Albany. In this letter I propose to devote myself to a description and study of the essential points of the Assembly Chamber.

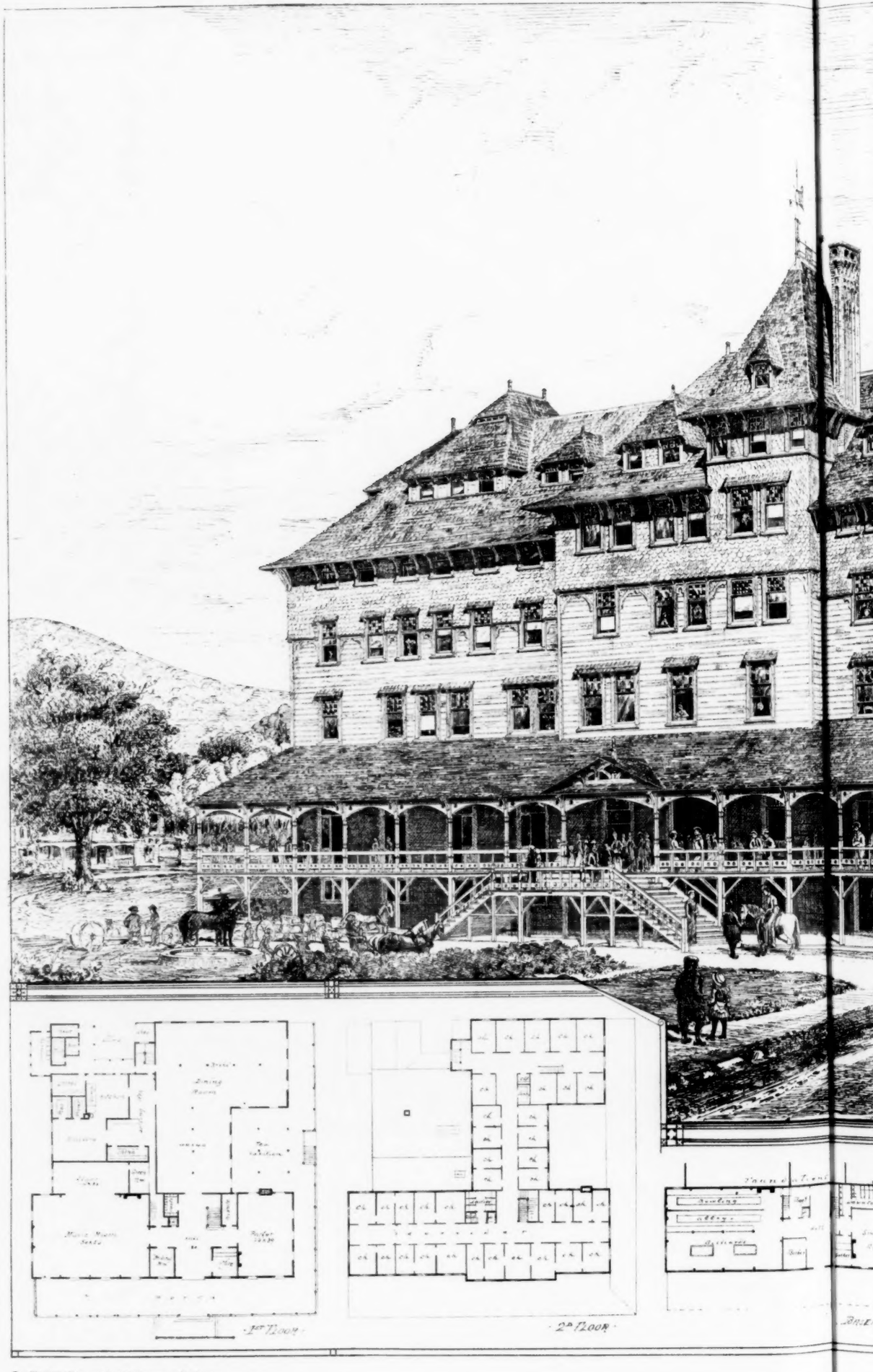
This room has already achieved a reputation as presenting the most monumental interior in the country; it certainly has the primary advantage of size, without which element no contrivance or skill of the architect can avail to produce an effect of grandeur, although of course it is a very common thing for architectural effort to be so ill bestowed as to diminish the apparent area. In this case the full value of the available space as an element of effect has been retained by the judicious simplicity of the leading features as contrasted with the complication and delicacy of the subordinate parts. Four great polished red granite columns with marble capitals sustain a vast quadripartite vault of stone over the central space; this vault is surrounded by four narrow lateral vaults with four square vaults in the corners, all having their outer bearings upon wall piers, as shown upon the accompanying plan. This simple disposition at once fills and satisfies the mind and leaves no essential point to be explained. The square compartments C and D are enclosed upon the floor with open stone screens supporting galleries about two thirds of the way up the height of the shaft; on a level with the capitals of the shafts is a higher gallery, extending across the end of the hall over the lobby G; a disposition of features nearly similar occurs at the other end of the hall, back of the Speaker's desk, so that the longitudinal dimensions of the upper regions are extended to the outer limits of this plan. This arrangement of galleries is very noble and impressive. The screen surfaces beneath them are highly enriched in the spandrels and over the arches with incised diapers, giving to them, with their filling of positive color distributed in small quantities, an effect almost Saracenic in profusion of surface enrichment. The lower galleries are furnished with stone railings pierced with patterns in geometrical Gothic; those of the upper galleries are flamboyant in character and broken around the piers at H and K, thus forming great corbelled capitals. The wall-surface B B is in the centre of the north front, while A A opens on the central court. These two wall-surfaces include the two upper orders of the central division of the façades, which I have already described. On each side we have thus two stages of windows, the lower stage showing three great round-arched windows on the main floor level, the upper showing six small divisions of the famous so-called Romanesque arcade, all glazed; two other continuous divisions of the arcade flank this range over the square compartments on either side. Between these two stages is a frieze or belt of panels to be occupied by Mr. Ward's bas-reliefs, and in the tympanum, formed on each side of the hall by the pointed lateral vault impinging against the wall-surface over the archivolts of the arcade, appears Mr. Hunt's decorative painting, too high to be easily seen from the floor, occupying a space too small by comparison to be conspicuous, and too much bedazzled by the windows beneath to assert itself as an indispensable element of the decorative scheme. The conditions of Mr. Hunt's work are seriously complicated also, first, by the large, positive, incised decoration, enforced with black



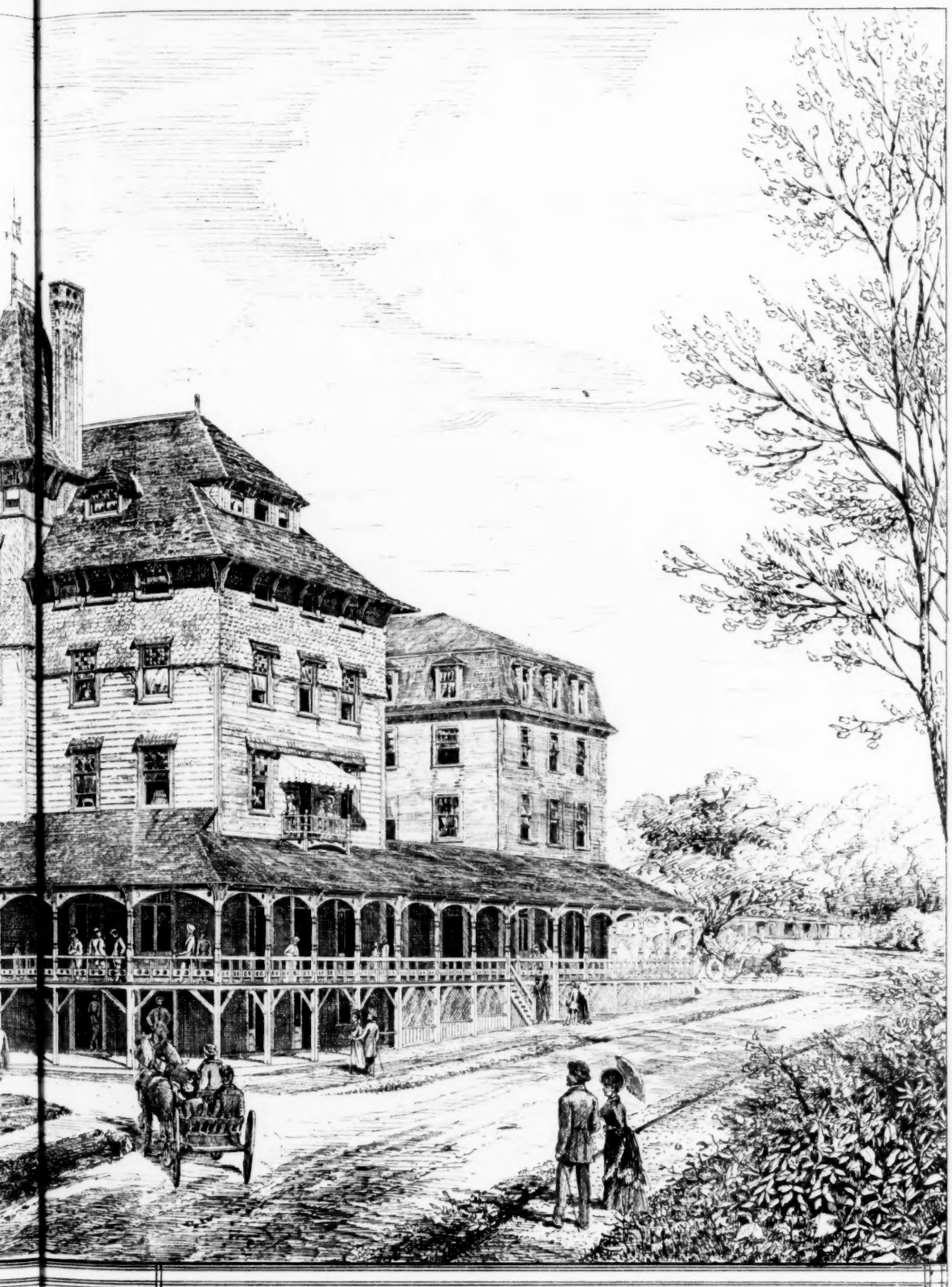

Assembly Chamber.

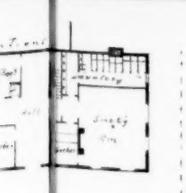
and primary colors, with which many courses of the stone *remplissage* of the vault are embellished, and, second, by the absence of a wall-rib which should prevent these decorative ranges from coming into absolute contact with the edges of the painting. With such unsympathetic surroundings it would seem that the only way by which Mr. Hunt could secure to himself the necessary freedom in his composition, both as regards form and color, was to isolate his pictures, after the fashion of the Venetian and Roman masters of fresco, by a surrounding frame, or to make a conventional background of black or gold against which his subject should be projected. I cannot but think that the manner in which he has carried his picture out to the perilous edges of the spaces at his disposal, and his preference for the natural rather than for the conventional treatment of his subjects, are, under the circumstances, not justified by the results. No artist, however subtle, could secure in such a place the preëminence which is due to a work of higher art unless he frankly started with the determination to vanquish these surroundings by a *tour de force*, and create rather a pictorial decoration than a decorative picture. The decision and firmness of the conventional forms by which the neighboring vaulting surfaces are enriched, the general character of the architectural features by which these tympana are beset, and the blaze of light which penetrates the arcade beneath them, all these appear to demand of the artist not so much measures of compromise, as measures of absolute conquest. Mr. Hunt's vigor of drawing and boldness of color have hardly proved sufficient to this task. There are, however, vacant wall-surfaces under the vaults at the ends of the hall, far better lighted, which offer a much better field for such work as Mr. Hunt has given, and which we understand he will be invited to occupy. But the immediate results are unimportant as compared with the fact that an attempt is here made on a great scale to give to Architecture and to Painting their proper relations in respect to each other. No one interested in the progress of better art can be

HOUSE
BUILT AT NEW LONDON
FOR J.A. HUMBLE ESQ.
E.C. Gardner Archt.
Springfield Mass.




THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST. BOSTON

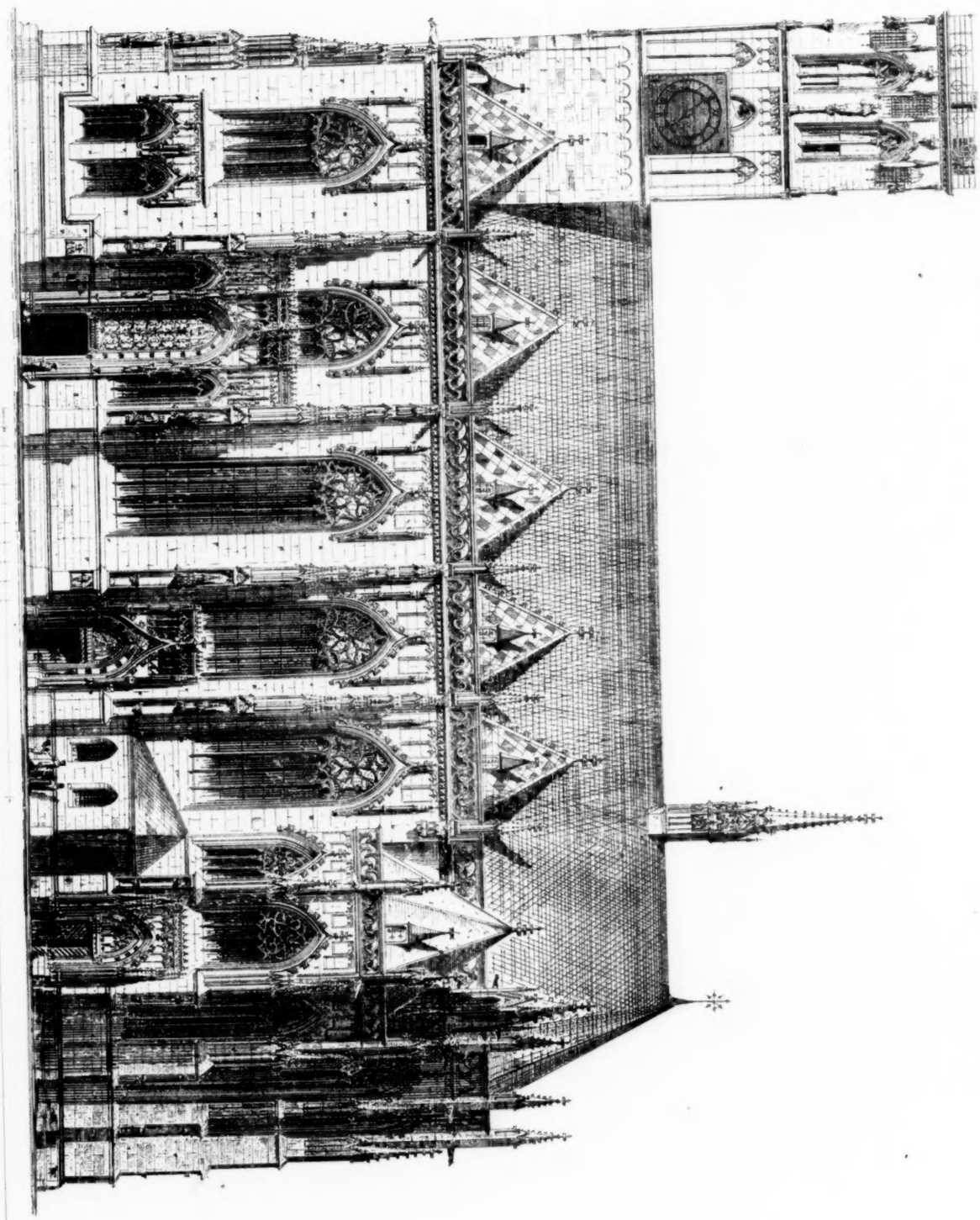




BASEMENT.

WEST · END · HOTEL
BAR · HARBOR · MT. DESERT · ME.
BRUCE · PRICE · ARCHT · NY

DEC · 78 ·



indifferent to a beginning so noble in its intentions and so fruitful in its promise.

There are several vital points of design with respect to this magnificent ceiling which the careful critic cannot fail to notice. Mr. Eidlitz, true to his *parti pris*, exhibits in this part of the work his characteristic indifference, even to those external conditions of the façade which he might himself have controlled and adapted to his interior if he had so chosen. His vaulting at the wall-piers A A and B B starts below the level of the upper arcade of windows, which was designed and executed under the present administration of the work, and *cuts across* those openings of the arcade which adjoin the piers in a manner which in France would be called brutal, but which we should prefer to characterize as audacious and defiant. Moreover, one looks in vain for an abutment to the thrusts of these vaults at the points named; there is no such appliance to be seen within or without, nor is the honesty of the Italian builders imitated by any visible tie at the springing line. But even this magician cannot conjure up a vault which will hold itself, and we must seek in the dark recesses above the vaulting for the hidden contrivances of iron which must bind the construction together.

All this work is Gothic, and Gothic which is at the same time vigorous and delicate. The lower parts of the wall-surfaces are profusely decorated with countersunk arabesque, defining the masonry of the wall, and filled in with strong color, well contrived to unite with the stone and relieve it from coldness and monotony. The scale of the corresponding decorations in the filling-in of the vaulting surfaces is so much larger than that of the diapers below, and occupies so much more of the space, that the effect of masonry, at the point where it is most desirable to show the solidity and reality of the work, is in part lost. The vaulting is so noble that to treat it thus seems almost like a painful excess, and it has certainly, as I have intimated, increased the difficulty of an artistic treatment of the wall-surfaces. The furniture is in all cases carefully designed and of course very richly decorated, and the drapery of the lower windows is sumptuous in fabric and large and noble in detail. The chimney-pieces under the square galleries and in the neighboring offices are of sculptured stone, and in some cases very elegant; but they seem in scale somewhat too domestic and hardly adequate in size of opening. The obvious difficulty of arranging the screen-work under the square galleries, so that it may adjust itself against the four great, round shafts, is frankly acknowledged, but the solution here attempted is not in all respects satisfactory. In short, in the innumerable details of an architecture so vast and complicated as this, a critic might find a boundless field for objections more or less petty if he chose to hunt for them. Yet, setting aside, for the moment, my objections to Mr. Eidlitz's contemptuous indifference for the casket in which his jewel is enshrined, I am prepared to believe that there is no modern work recalling the mediæval spirit of design, conceived with greater intelligence and learning or executed in a manner more thorough and, on the whole, sincere.

Mr. Richardson will, it is to be hoped, remember his academic training in the schools of Paris, and respect the exterior enough to continue at least the sentiment of it into the portion of the interior assigned to him. But as to the qualities of design and workmanship, he will find in the parts already done within the north wing a competition of the most stimulating kind. H. V. B.

## THE ILLUSTRATIONS.

WEST END HOTEL, BAR HARBOR, ME. MR. BRUCE PRICE, ARCHITECT, NEW YORK.

THIS design represents an addition now making to the Heywood House, the part of the building here shown with a "French roof." The *motif* of the exterior is an umbrella, the intention being that where there is a roof or porch it shall shield to the utmost the building, and the guests, from sun, wind, rain, and storm. On plan, the main feature of the principal floor is the music-room, a large room for music, dancing, theatricals, and the other in-door recreations of a seaside resort. The basement is essentially the men's quarters, and gives them, quite removed from all danger of offence to Dame Propriety, all that can be desired for making it their especial domain. The building will be painted in Indian red, brown, and olive green. It will be ready for guests early in July.

RESIDENCE FOR COL. J. A. RUMRILL, NEW LONDON, CONN. MR. E. C. GARDNER, ARCHITECT, SPRINGFIELD, MASS.

ST. LAMBERT'S CHURCH, MÜNSTER, WESTPHALIA.

We here reproduce the south side of the Church of St. Lambert, which, like the other views of it which we have published, is copied from the *Allgemeine Bauzeitung*.

THE CONSUMPTION OF WOOD. The Detroit *Free Press* says that the annual demand for the ties and sleepers of our 90,000 miles of railway is estimated to be in round numbers about 40,000,000 square feet. We have about 75,000 miles of telegraph wire to put up, for which 800,000 trees are needed, while repairs possibly call for 300,000 more trees a year. The common lucifer match uses up 300,000 cubic feet of the finest pine annually. The bricks baked every year require 3,000,000 cords of wood, which would be all that 50,000 acres of average timber-land would contain. Shoe-pegs exhaust annually 100,000 cords of wood; lasts and boot-trees some 500,000 cords of beech, birch, and maple, and about as much more is required for the stock of planes and other tools.

## CORRESPONDENCE.

THE DEATH OF MR. GRIFFITH THOMAS.

NEW YORK.

MR. GRIFFITH THOMAS, the architect, died at his residence in this city, 92 Fifth Avenue, on Saturday, January 11. As an architectural designer and in the active pursuit of his profession he has done more to build up this city during the past forty years than any two men in the same line of effort. In one sense his success was up to the full measure of the most sanguine expectation, in another sense he was not a desirable member of the profession. Much may be said in his favor, very much indeed, but on the other hand it is not to be denied that much of his work was commonplace. He seemed to have opportunity for the carrying out of magnificent architectural ideas, for making the metropolis of the New World a city of beautiful structures, but the kindest criticism which can be passed upon the hundreds upon hundreds of costly buildings over which he stood as creator is that they were not shams. Taught under good professional guidance in the office of his father, he so perfectly caught the spirit which animated all the designs of the senior Mr. Thomas, that today the line can with difficulty be drawn between the buildings erected fifty years ago by Thomas Thomas, and the erections of the past decade by the gentleman who has just died.

The name of Thomas became known in this city, in circles of architecture, on the arrival of Thomas Thomas, a native of the Isle of Wight, who had studied in England under the tuition of Nicholson. The older architect had three sons, two of whom became architects, and the third went into carpentry and became a master-builder; Griffith remained with the father, while his brother in the profession opened an independent office. It was in 1838 that Griffith came to this country. He was then a stripling of eighteen years, but a good draughtsman, and on the wall of his private office hangs an excellent copy of a perspective view of the interior of the Pantheon at Rome, done as a piece of practice, but done *con amore* as well, for the young Thomas imbibed from his father the tradition of the office in regarding the classic and Italian modifications as the style suited for city buildings. Thomas Thomas built up a good professional practice, and many important commissions were given him. Griffith was an ardent student, and his shrewdness as a business man soon enabled him to take entire control of the business, though as long as the senior lived his name remained at the head of the firm. The Barnums, Ciscoes, Johnsons, Bishops, and Wolfs were among the patrons of the firm of Thomas & Son, and for years past the Astors, father and son, have availed themselves of their aid. Griffith Thomas had two sons, who entered the office of their father, but died after attaining their majority, and shortly after the head of the family in America followed them, leaving Griffith as the only architect of the name.

Personally Mr. Griffith Thomas was a man of fine presence and engaging manners, and one of tireless energy. From eight to one o'clock each day he was to be found at his office, and his capacity for dispatching work was very great. His working drawings were models of thoroughness and accuracy, and it was a boast of his that he had never overrun the estimates he had laid down for any particular building, where his plan was adhered to. Outside of his business he was a man of most expensive personal habits, and, with a princely income, he lived in a very quiet though almost royal way. On this account it is doubtful whether he leaves a sum bearing any proportion to the amount of his professional fees during his forty years of practice in New York. To recite a list of the works carried out by the architects Thomas would be to give a series of the most expensive and important buildings in the city. He built in a princely way and with a liberal margin financially. The client of Mr. Thomas could rely upon getting a substantial structure; that the buildings were satisfactory in other respects is evidenced by Mr. Thomas's popularity as a designer. Work fairly poured in upon him, and striking upon a period of such great financial freedom, and even prodigality, he profited personally in an exceptional degree. Many millions of dollars were spent in permanent building improvements under his direction, and it is said that by actual count each block on the length of Fifth Avenue to the Park has an average of three of his buildings. Brown-stone was his favorite material, though in building a magnificent residence for himself on Fifth Avenue near 42d Street, now a part of the Bristol Apartment House, he chose a lighter sandstone. For business structures, he soon recognized the value of iron, and set to work duplicating forms of stone in that metal, until Broadway and the dry-goods districts of the city are crowded with these metallic-stone constructions. When the old New York Hospital was removed from the lower part of the city, the closed space was in a large measure covered by these great warehouses under the supervision of Mr. Thomas; one was a duplicate of another, and the actual effort of designing was the merest trifle. One of the first of his iron structures was the Lord & Taylor store at the northwest corner of Broadway and Grand Street. The idea took, and when many of the great business houses of New York were seeking new houses Mr. Thomas aided in supplying the want. The United States Mortgage Company's building on Wall Street is a Thomas building, and among the other banks are the Chemical Bank building, the Park Bank, the Greenwich Savings' Bank on Sixth Avenue, and the New York Life Insurance Co.'s building, in which Mr. Thomas for eight years carried on his business. Taylor's Hotel, the Brandreth House, Fifth Avenue Hotel, St. Nicholas Hotel, and the St. James are examples of his work in that line. The Grand Opera House at

Eighth Avenue and 23d Street was constructed by him for Mr. Pike, the Cincinnati millionnaire. Mount Sinai Hospital and the Women's Hospital are his, as are the Stock Exchange, Astor Library, and the Society Library, the Kemp Building at William and Cedar Streets, and the structures at William and Pine Streets, the Domestic Sewing Machine building, the Singer Machine Co.'s building, and the Duncan Building on Union Square, the Potter Building at Lafayette and Astor Places, stores of Arnold, Constable & Co. at 19th Street and Broadway. In church architecture, as might have been expected, the Thomases were no willing competitors. Dr. Spring's Brick Church on Fifth Avenue, the Madison Avenue Baptist Church, and the 23d Street Baptist Church, with the Chapel of the First Baptist Church on Park Avenue, are about all, with one or two country churches, they ever built, but it was in private residences and in large buildings for business uses that the bulk of their practice lay. Out of town little business was sought, since the character of the city buildings was not such as to create a fame in other places. The designs for the Kimball House in Atlanta, the first part of the Palmer House, Chicago, with banks in Pittsburgh, Pa., and Paterson, N. J., are from the Thomas atelier. In competitions Mr. Thomas was a ready entrant, and a very successful competitor, as a rule, the class of buildings which he designed creating a favorable opinion in the mind of the ordinary layman. In association with his fellow-architects Mr. Thomas was very distant. He joined no chapters and institutes, though he was not opposed to them, merely feeling self-confident enough to refuse to enter them. He was a most systematic worker, and by his death on Saturday from a rush of blood to the head New York loses a memorable citizen. A dozen essays might be written on the lessons of his life. His death, so soon after that of Mr. Upjohn, might suggest a parallel between these two men, of one profession, yet so diverse in mental and artistic feeling and sympathy. W.

## PRIAM'S PALACE.

What I have brought to light of the Trojan houses in general, and of the last Town-Chief's or King's mansion in particular, are merely the substructures, on an average five feet high, which in the absence of cellars served as store-rooms. A similar habit of using the ground-floor as store-rooms appears to have existed at the time of the poet, for we see in the Iliad (vi. 288, 289) that Hecuba descends to the store-room where the artfully embroidered garments were stored. Had the store-room been on the floor inhabited by the family, the poet would not have said that the Queen descended. The substructures of the royal house consist of uncut stones joined with clay; the inner side of the house-walls has a thick coating of clay which has been whitewashed with clay. If asked, "Is this Priam's palace, as described by Homer?" (Iliad, vi. 242–249) I would answer by the verse of Virgil: *Si parva licet componere magnis.* In fact, according to the poet, the palace contained fifty chambers for the King's sons and twelve for his daughters, and all were of polished stone. But Homer can never have seen the Troy whose tragic fate he describes, because at his time, and probably ages before his time, the city he glorifies was buried beneath mountains of *débris.* But at his time public edifices, and probably also royal mansions, were built of polished stones, and he therefore attributes the same architecture to Priam's mansion, magnifying it with poetic license. This building has towards the gate a corridor 40 feet 8 inches long by 6 feet broad, leading to a chamber only 7 feet 6 inches long by 4 feet 6 inches broad, in which the ingenious Dr. Moss discovered a gutter of hemispherical form; this room is nearly filled up by a huge jar 5 feet 6 inches high and 4 feet 7 inches broad. By a door only 1 foot 0 inches broad this chamber communicates with another large one, which is 12 feet 3½ inches long and 7 feet 4 inches broad, and contains three immense jars of precisely the same size as that just referred to, and a somewhat smaller one; the pottery of the jars is upward of 2 inches thick. From this room we enter, by a door 3 feet 2 inches broad, into a larger one, which runs parallel with the aforesaid corridor, and is 24 feet 4 inches long and 12 feet broad, and leads to another chamber 10 feet long and 8 feet broad. This is the best preserved part of the mansion, to which belong also the buildings which separate it from the northern part of the great wall. I therefore do not see any reason why the mansion, if, as is highly probable, it had five or six upper stories of sun-dried bricks or wood, may not have had even more than one hundred smaller or larger rooms. I secured one of the bricks, which is 2 feet long, 1 foot 3 inches broad, and 3½ inches thick, and which has in the conflagration been converted into burned brick.

In several directions beneath the royal mansion we see the walls of a still more ancient building, which we cannot but ascribe to the first city erected on these sacred premises, because all the fragments of pottery which we find in the very chambers of the ancient mansion, immediately below the Trojan stratum, have on both sides that beautiful lustrous red, black, or brown color which I never yet found elsewhere but in the strata of the first city. I now feel even bold enough to say that the great circuit wall was not built by the Trojans, but by their predecessors, because in carefully digging off the *débris* from that wall I find it covered by a layer of rubbish about one foot thick, which is not Trojan, because it does not contain any burned matter, and because it is full of pottery peculiar to the first city, which cannot possibly be there by mere accident. Above this layer the great wall is covered six and seven feet deep with brick-colored ashes of the tower-like buildings of sun-dried bricks and wood, which once served both as its ornament and as its works of defence, and Dr. Moss calls to my remembrance that in this respect Troy resembles several cities in Scripture; so, *e. g.*, Joshua (ii. 15) describes the house of Rahab, situated on the circuit-wall of Jericho. I have equally acquired the certainty that the gate, which has now turned out to be treble, was built by the inhabitants of the first city of large, rudely-cut white stones, which we see in all the lower layers of the gate-walls, and the passage was paved by them with white flags. The succeeding people, whom I identify with the Trojans, had merely repaired the gate, covering the white flags with others of a reddish color, and heightening the side-walls of large white slabs by a masonry of small stones. The reddish flags, having suffered too much by the white heat in the conflagration, have nearly all crumbled away since I brought them to light. Of the white flags I lifted one, and having dug beneath it a large square hole, three feet deep, I only found there potsherds belonging to the first city. The third gate is 17¼ feet broad, and beyond it the masonry continues still for ten feet on either side. Of course, the three gates, as we now see them, are merely the substructures of a tower-like building of sun-dried bricks and wood.

One of the most curious objects ever found here is undoubtedly a distaff 11 inches long, around which is lengthwise wound a large quantity of woolen thread, black like coal, probably from being charred; but I trust that, locked up in a glass vessel, it will keep very well. I discovered it in the royal mansion, at a depth of 28 feet below the surface. According to Dr. Moss, the wood of the distaff is the stem of a very young tree. — *Dr. Schliemann in The Athenæum.*

## DESCRIPTION OF A PAPER DOME FOR AN ASTRONOMICAL OBSERVATORY.

An astronomical observatory has recently been erected for the Rensselaer Polytechnic Institute, through the liberality of Mr. E. Proudfit, of this city. In maturing the plans and supervising the erection of the building, I have introduced an improved method of constructing revolving domes, a brief account of which may not be without interest.

While making the preliminary inquiries, I ascertained that a dome of the dimensions required, constructed in any of the methods in common use, would weigh from five to ten tons, and require the aid of cumbersome machinery to revolve it. It therefore occurred to me to obviate this objection by making the frame-work of wood, of the greatest lightness consistent with the requisite strength, and covering it with paper of a quality similar to that used in the manufacture of paper boats; the principal advantages in the use of these materials being that they admit of great perfection of form and finish, and give extreme lightness, strength, and stiffness in the structure, — prime qualities in a movable dome. A contract was accordingly made with Messrs. E. Waters & Sons, of this city, the well-known builders of paper boats, for the construction of the dome, and they have carried out the undertaking with great skill and success.

The dome is a hemisphere with an outside diameter of twenty-nine feet. The frame-work consists primarily of a circular sill which forms the base, and two semicircular-arch girders set parallel to each other, four feet apart in the clear, and spanning the entire dome. These are firmly attached to the sill and kept in a vertical position by means of knee-braces. The sill and girders are of seasoned pine, the former being 8¼ inches wide by 3½ thick, and the latter each 4½ by 3 inches.

The paper covering of the dome is made in sixteen equal sections, such that when set up side by side, their bases on the sill, and their extremities meeting at the top, they form a complete hemispherical surface. The frame-work of each section consists of three vertical ribs of pine each 3¾ inches in width and ¾ of an inch thick, one at each side, and one midway between, and meeting at the apex. The paper was stretched over this frame-work as follows: —

A wooden model of full size being made of that portion of the dome included within one of the sections, with a surface truly spherical, the frame-work of a section was placed in its proper position on the model, so that its outer edges formed part of the same spherical surface, and covered with shellac where it was to be in contact with the paper. The sheet of paper cut in the proper form was then laid on the model while moist, the edges turned down over the side ribs, and the whole placed in a hot chamber and left until thoroughly dry. In this way the several sections were dried in succession over the same model. The paper used is of a very superior quality, manufactured expressly for the purpose by Messrs. Crane Brothers, of Westfield, Mass. Its thickness after drying is about one-sixth of an inch, and it has a structure as compact as that of the hardest wood, which it greatly excels in strength, toughness, and freedom from any liability to fracture.

After being thoroughly painted, the several sections were ready to be set up side by side on the sill, and connected together by bolting through the adjacent ribs. The space between the arch girders being left uncovered on one side from the sill to a distance of two feet beyond the zenith, the upper ends of the sections required to

be cut off and accurately fitted to the girders. The joints between sections were made weather-proof by inserting a double thickness of heavy cotton cloth saturated with white lead paint. The adjacent side ribs were then bolted firmly together through the paper and cloth, the lower ends attached to the sill by angle irons, the upper ends bolted to the girders, and the lower edge of the paper turned under the sill and securely nailed. The joints were afterwards painted over on the outside. As the entire surface exposed is free from nail-holes or other abrasions in the paper, the structure promises, with an occasional coat of paint, to last for many years, and to form an effective and serviceable roof.

The four-foot opening between the arch girders is covered by a shutter, which is also of paper stretched over a wooden frame. With the exception of about two feet at the lower extremity, this shutter is in a single piece. Attached to its sides are a series of iron rollers, which run on a railway track of band iron laid down on the girders, by which means the shutter can be moved over to the opposite side of the dome. The wooden sides of the shutter have iron flanges attached to their lower edges, which project under the railway tracks, making the whole weather-proof. The shutter is opened and closed by means of a windlass and wire rope.

The weight of the dome and its appurtenances is about 4,000 pounds. It is supported on six eight-inch balls which roll between grooved iron tracks, and can be easily revolved by a moderate pressure applied directly, without the aid of machinery. — *Professor Greene in the American Journal of Science and Arts.*

## PLASTERERS' WAGES IN ST. PAUL.

ST. PAUL, MINN., January 11, 1879.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

*Dear Sir,* — The building trade of St. Paul from present prospects looks very good, I have a number of buildings on hand with a good prospect ahead.

Plasterers' wages, like all other wages, are low. Good work is being done at sixteen to eighteen cents per yard.

Yours very truly, LEROY S. BUFFINGTON.

## A CORRECTION.

NEW YORK, January 14, 1879.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

*Dear Sir,* — Your New York correspondent has given me credit in his last letter for a pretty bit of Queen Anne work which I did n't do — the front on Fifth Ave., near Thirtieth Street.

I believe it was done by my friend, Mr. Haight, and I beg you will do him justice in your next. Yours truly, G. E. HARNEY.

## A PROPOSED ALTERATION IN THE LAW RELATING TO WOODEN BUILDINGS IN BOSTON.

BOSTON, January 21, 1879.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

*Dear Sir,* — Some of the members of the Society of Architects in Boston will remember how much pains they took and how many hundreds of dollars they spent before the great fire in Boston, in framing a building law; and the whole society knows that the law as passed does not come up to the standard of the society. Such careful restrictions as an uneven intelligence has left, however, should not be given up without a struggle for common sense, even if we cannot have technical perfection in the law. It is well known that outside of what are called the "building limits" of Boston, wooden buildings are allowed of certain fixed heights, determined by the grade of the street. For instance, one part of the ordinance provides that "no wooden building, to be used for other purposes than a dwelling-house, shall exceed a height of fifty-two feet above the sills, and said sills shall not be laid below the grade of the street, and not more than three feet above the grade as established by the city." This is a rule made for safety. It may be the occasion of inconvenience, now and then, to individual owners or builders, but the property of the mass of owners and builders is the safer for it. The individuals also who are reluctantly compelled to comply with it gain by it in the long run.

Nevertheless, in the Boston Common Council a member proposed, the other day, to amend the law as above stated by adding to it the following words: "unless otherwise directed by the Inspector of Buildings." This is a new use for the inspector. Instead of notifying builders to obey the law, he is to make the law, when the builders notify him of what they want.

Whether the Society of Architects drew this particular rule or not, it is quite certain that they would prefer it to the discretion of any individual who may happen to be the Inspector of Buildings. The newspapers say that there is to be a hearing concerning this matter, before the Joint Committee on Ordinances, and if persons who are informed about the matter, and who have the safety of the city at heart, take pains to appear before that committee and show them what a disastrous effect such a lawless ordinance might have, they will do a public service. Perhaps it is necessary to allow wooden buildings in some places, but it is not necessary to allow them to be of a height unlimited except by the inspector's discretion. OBSERVER.

## GAS BUOYS.

THAT the buoys which mark channels and wrecks are sometimes destroyed or displaced by vessels running along the coast on dark nights is well known. After two trials of lighted buoys, therefore, the Trinity Board have resolved upon sending a buoy, of which the lantern can be kept continuously burning, to a station off Dundee. The first of these trials took place in August last at the Trinity Wharf, when the light lasted uninterruptedly for twenty-eight days. Water was pumped upon it from a steam-engine, to see what would be the effect of the shock and drenching, and no harm was done. The buoy was then sent down to the Nore, and there burned steadily for twenty-four days. The same buoy has now left London for its appointed place near Dundee. Provision has been made for keeping it alight without any interference for thirty-four days. It is a buoy of most awkward construction; but this does not lessen its usefulness, and others are being more skilfully made to receive the same illuminating apparatus. This is a modification of what is known as Pintsch's compressed gas system. It was first brought out in Germany, and originated from the demand of some of the railway authorities for a better means of lighting their carriages than that afforded by common oil lamps. Attempts to light railway trains by ordinary gas were first made in England about fifteen years ago, and either the quantity wanted for the whole train has been carried in the break-van, or each carriage was provided with its special bag. The expense and trouble in all instances have been very great, and almost prohibitive. After several failures with coal gas, Mr. Pintsch at last adopted a rich, heavy gas, extracted from oil, which he employs in a compressed state; and he soon found that it was not only better, but easier, to make the lighting of each carriage independent of the rest. The gas is produced by a simple and not costly apparatus for distilling shale oil or any fatty material. It is then purified, compressed to the extent of ten or twelve atmospheres, and stored in metal cylinders. A supply sufficient for use during thirty or thirty-five hours is, as required, taken into light wrought-iron holders, at about six atmospheres' pressure, fixed beneath the carriages. The cylinders are provided with an ingenious arrangement by which the pressure is regulated and equalized, and the gas allowed to issue and supply the burners. The gas is burned through a small fish-tail burner placed beneath and close to a convex reflecting surface of white enamelled iron, in which a small slot is made to admit of the passage of the heated air to the chimney. The necessary atmospheric air enters through the lid of the lamp. The construction is such that no gas can find its way into the interior of the carriage, and the light can be modified at pleasure without being extinguished. Each carriage can be separately fitted with all that is necessary for illumination; the light is perfectly under control, and the weight and bulk are unimportant. The system has been adopted by some twenty-three railway companies in Germany, is in use in the imperial travelling post-offices, and is to be found in the saloon carriages of the Emperors of Germany and Russia. In England it has been used for two years (somewhat penuriously, perhaps) in the carriages of the little branch line running from Baker Street to St. John's Wood, and is in course of adoption elsewhere. The saloon carriage used by the Prince of Wales is already furnished with this light, and on a recent occasion the gas remaining in the holders after a previous journey was found at the end of three months to be as good as ever, and more than sufficient for the next trip. This gas is manufactured at present at the rate of 16s. 8¾d. per 1,000 feet, and the consumption per light per hour is 0.5,983 of a cubic foot. Coal gas, which will not bear compression, is in use on the Metropolitan and District Railways, and costs only 3s. 9d. per 1,000 feet; but its consumption is, in round numbers, at the rate of 4 feet per hour instead of 6-10ths of a foot. That is to say, it takes 6,500 feet of coal gas to do the work which 1,000 feet of the Pintsch gas accomplishes, at a cost of £1 4s. 4½d. for the former as compared with 16s. 6d. for the latter.

With regard to floating lights, it is proposed to make the buoy itself the recipient for containing the compressed gas, with its regulator (which is one of the most important points of the invention), and the lantern at the top of a short conducting tube. A buoy of ordinary size will burn about three months, night and day, with only one filling, and the light is visible at a distance of about four miles. There is, however, in existence an electric lighting apparatus which might be employed, so that the light could be extinguished at sunrise and restored at night, giving, of course, a much longer duration to the working of the buoy. It will be interesting to see the result of this experiment, as the success of the scheme would be a boon to navigation out of all proportion to the increased comfort of a few benighted and betunnelled railway travellers. — *Pall Mall Gazette.*

## PUBLICATIONS RECEIVED.

THOUGHTS ON ARCHITECTURE. Its Literature and Practice. By Geo. C. Mason, Jr., Fellow American Institute of Architects. Newport, R. I.: Marshall & Flynn, Printers, 1879.

ADDRESS AND MEMORIAL in Opposition to the Bill (S. No. 300 and H. R. No. 1612) "To amend the Statutes relating to Patents and for other Purposes." Read before and adopted by the Cincinnati Board of Trade, December 18, 1878. Cincinnati: Times Book and Job Printing Establishment, 1879.

THE ILLUSTRATED WOOD-WORKER, for Joiners, Cabinet Makers, Stair Builders, Carpenters, Car Builders, etc. Monthly. Chas. D. Lakey, Publisher, New York, 1879.

## NOTES AND CLIPPINGS.

Iron Working Improvements. — An English inventor proposes to prepare from iron a hydrated peroxide by forming heaps or beds of the metal, and keeping it moist with water of a saline solution, and in some cases he hastens the oxidation by the use of a galvanic battery. He takes the hydrated peroxide thus obtained and reduces it to a fine powder. He places at the bottom of a crucible a quantity of the oxide, and over it places cast iron; the crucible is then heated in a furnace until the iron is melted, and as soon as the oxide has acted sufficiently the metal is cast into ingots. These ingots are employed in the manufacture of steel by remelting them with steel or iron scrap, according to the quality of resultant required. This hydrated oxide is also used with good effect in puddling furnaces, being spread over the bottom, and the iron melted and worked over it.

The Catalpa Tree. — Mr. E. E. Barney, of the Barney, Smith & Co. Car-works, has for a number of years been engaged in investigating the relative qualities of different species of woods, for the purpose of obtaining a wood suitable for railroad ties, that would stand the weather better than those now in use. His investigations have led to an intimate knowledge of the catalpa tree, a tree that grows readily in most climates and develops an extraordinary durability. He has specimens of the tree that have been in the ground in dry soil for fifty and sixty years respectively, and show but very little signs of decay. Some time ago Mr. Barney received a letter of inquiry from Sir Joseph Hooker, the eminent naturalist and manager of Kew Gardens, London, requesting information as to the catalpa, and some seeds and samples of the wood. He had seen the results of Mr. Barney's experiments, and felt a great deal of interest concerning them. Similar letters have also been received from officers of the queen, in Australia and New Zealand.

A New Fountain. — Mr. Henry L. King, who recently died at Albany, has made a bequest of $20,000 for a public fountain to be erected in Washington Park, in that city.

A Curious Tree-Growth. — An exchange states that a singular phenomenon is noticed at Greensburg, Indiana, the county seat of Decatur County. In 1870 a green plant was seen sprouting from a crevice in the court-house tower, which could not be easily reached, and has since grown into a fine silver maple tree, which is at present twelve feet high and three inches in diameter. It can be seen for many miles around, and trains have been stopped by accommodating conductors until the passengers could see the wonder. The rapid growth of the tree is forcing the stones apart, but the people will not permit it to be removed yet.

Why Kerosene Lamps Explode. — Professor R. C. Kedzie, M. D., President of the State Board of Health of Michigan and professor in the State Agricultural College, lately delivered an address before the Michigan Legislature, in which he explained the manner in which kerosene lamps usually explode. He said: "Some persons seem to think the explosion of a kerosene lamp is caused in the same way as a boiler explosion; namely, by the pressure of the vapor of the oil inside the lamp. In rare instances explosions may be caused in this way; for example, where the ignited oil overflows the lamp and the lamp is enveloped in flame. But explosions usually occur in another way; namely, where the vapor of kerosene is mixed in proper proportions with air, and thus a true explosive mixture is formed, which will explode with the force of a gunshot when fired by flame. This explains why a lamp is in more danger of exploding when only partially filled with kerosene, because a larger amount of space is filled with the explosive mixture; it is the same as a larger load of powder in a gun. Many persons suppose that there can be no danger of a lamp explosion unless the whole body of the oil in the lamp is heated to the flashing point; that because the temperature of our rooms never rises to 120° there can be no danger in using oil whose flashing point is 120°. But Dr. Baker, secretary of the State Board of Health, has proved by experiment with lamps that an explosive mixture may form and the lamp may explode while the body of oil in the lamp is not above 85° F. The temperature of the body of oil in the lamp is not the only factor to be considered, because different parts of the lamp become very unequally heated. If you will touch the brass collar of a lamp which has been burning for some time you will find it quite hot, and the tube supporting the wick is still more strongly heated. The formation of vapor will be determined by the hottest part of the lamp which comes in contact with the oil. When the combustion is imperfect from any cause, the brass fittings of the lamp become excessively heated. Dr. Baker found in his experiments that when the chimney was removed, by breaking or otherwise, and the lamp continued to burn, the temperature of the brass collar rose very rapidly in every instance; in one case in 14 minutes it rose to 161°, and in another case in 10 minutes to 155° F. In this last instance very rapid explosions occurred by the side of the wick, and to prevent the whole lamp from exploding the light was extinguished. In none of these experiments did the temperature of the body of the oil rise above 85° F. Many persons on leaving a room 'turn down the lamp' to save oil, but such economy is very liable to cause a lamp explosion, which is anything but economical. I know of a case in Charlotte which illustrates the danger of this practice. A lamp in a store was turned down during the absence of the clerk; a person passing saw the lamp explode, and by promptly breaking open the store he extinguished the fire. If a light is not needed in a room either extinguish the lamp or leave it burning with the usual blaze."

Wood-Staining. — Wood may be stained *brown* by a concentrated aqueous solution of permanganate of potash; *red*, boil one fourth pound of logwood and one half ounce of soda in one pint of water, apply it hot, and then wash it over with a strong aqueous solution of alum; *rose*, iodide of potash in twelve parts of water for a first coat, and corrosive sublimate in forty parts of water for a second; *blue*, indigo solution, or a concentrated hot solution of blue vitriol, followed by a dip in a solution of washing soda; *yellow*, turmeric dissolved in wood naphtha, or aqua regia in three parts of water; *green*, verdigris dissolved in four parts of water. — *Fortsch. d. Zeit.*

Flooding the Sahara. — M. de Le-seps, who has lately made a visit to Tunis, says that the Arab chieftains of the south of the Aures keep up the tradition of there having existed in former times a sea in that neighborhood from five hundred to six hundred leagues in circumference. He also has been enabled to disprove the idea that the formation of a new lake would do away with the oases, for he has discovered that these are all from fifteen to forty metres above the level of the sea, whereas the desert itself is below that level. Traces of Roman civilization have been found in the desert, and among them the remains of an amphitheatre like that in Rome.

The Great Hungarian Tunnel. — On October 21 the great Josef adit at Schemnitz in Hungary was opened. The works have been carried on since 1872, the Hungarian government granting £10,000 a year toward them. The adit is over ten miles long, being some 50 yards longer than the Mont Cenis Tunnel. The total cost of the undertaking was £459,900; it was carried out entirely by Hungarian enterprise, and partly with Hungarian machinery.

The Oldest Obelisk. — Next after the greatest, it may be in order to notice the oldest of the existing obelisks. This is the one close to the modern village of Matareeah, or the site of Heliopolis, in the land of Goshen, near Cairo. A single perpendicular line of hieroglyphics ornaments each side and records its erection by Osirtasen I., or probably about B. C. 3000. The inscription, with one slight exception, is the same on all sides. A myriad of wasps' nests now completely obscure the carvings on two of the surfaces. Authorities differ regarding its height, but sixty-eight feet two inches is given as the latest measurement by Mariette Bey. Nearly six feet of the length is buried in the accumulation of soil deposited by the Nile; and the stone, even at the surface of the ground, presents sad evidences of the destruction caused by repeated visits of the water. The opposite sides only are equal, the measurements at the base being 6 feet 1 inch and 6 feet 3 inches. Pococke gives 6 feet and 6 feet 4 inches as his finding in the same connection. The southern side of the shaft is the best preserved, while the western is in the worst condition on account of having scaled to a height of about fifteen feet. This obelisk is supposed to have stood at the entrance to the great Temple of the Sun. Remnants of the temenos or enclosure of this sanctuary still remain. — *Brooklyn Union-Argus.*

A Spanish Kitchen Fire-Place. — In connection with the papers on "The Open Fire-Place," which we are now publishing, the following description of a Spanish kitchen fire-place may not be without interest. It is given in the words of an English traveller, Major J. S. Campion: —

"Almost in the middle of the room was a rough hearth, about four feet square and a foot high, and composed of tiles, flat stones, pieces of iron, — anything that would not consume. In its centre burned a fire of three sticks laid star fashion, with a blazing brushwood heaped on them. Around stood, with different messes stewing in them, a goodly number of pottery pipkins and utensils, in shapes and patterns identical with the Roman ones in use before Christ. A large wooden hood, supported by massive rafters, caught and conducted such portion of the smoke as did not circulate about the room to a hole in the roof, furnished with a rough louvre, through which it escaped, and from a cross iron of the hood hung a stout chain, terminating in a hook, by which was suspended a large pot full of potatoes slowly simmering. In a corner stood a primitive-looking casserole range, for cooking with charcoal in little hollows."

Hazing in French Ateliers. — Hazing among students of Gérôme and Cabanel in Paris has features worthy of an American college of twenty years ago. A Maryland lady sends the *Tribune* an account of the recent case which she received from an American art student now in Paris. A fellow-student of his had just succeded in entering with Gérôme, and had begun work in the studio, when one day he was sent out with other new students to buy bread and wine for the older ones, which is the custom in Paris. On their return, a number of students from Cabanel's studio tried to take the bread and wine away from them, and succeeded in taking possession of one student and capturing his bottle of wine. In return for this indignity, a reinforcement from Gérôme's studio went into Cabanel's and tied ropes to one of the students, dragging him over the floor into their own room, when they threatened to paint him if the bottle of wine was not returned. At last he consented to pay for the wine. This made the students very hilarious, and they gave forth loud shouts, and banged at the doors with vigor. The noise aroused the directors of the studios, who came in, and after explanations it was ordered that the place be closed. There was terrific shouting and yelling from the Frenchmen after hearing this. In a few days some further disturbance occurred, and on December 3, Cabanel's studio was ordered to be closed for two months and Gérôme's for three weeks.

Labor and Material in 1822. — The memorandum book kept by the Friend who superintended the building of the Indiana Yearly Meeting-House in 1822 furnishes the following items, which show the differences in prices in some things then and now: —

Paid Reuben Bently for quarrying stone, five days in the water, $2.50.
Paid Thos. Owen for 1 keg 10d nails, $12.90.
Paid Edward Frost for 1 keg 4d nails, $16.56¼.
Paid Wm. Cox $2.10 [$210 ?] for 50,000 bricks, delivered on the grounds.
Paid Nathan Leonard the same amount for the same number of bricks delivered.
Paid Jas. Morton for 210 bushels of lime, $12.62½.
Paid Zimri Cook $55.06¼ for 817 pounds of iron.
Paid Wm. Scott for 2 days' work painting, $1.
Paid John Wright $9.31¼ for 90 pounds of putty.
Paid Wm. Dunham $95 for finding material and plastering meeting-house.
Paid Wm. Putman $7.30 for 27 days' work.
Paid Joshua Cox 12½ cents for sweeping the roof of the meeting-house.
Paid Lewis Morrow $4.50 for two weeks' work making mortar.
Paid John Pool 56¼ cents for 2 days' work.
Paid Joshua Bond $44.06¼ for 7½ gallons of oil. — *Exchange.*